

**List of Claims:**

Claim 1 (original): A method for depositing micro-lenses on a semiconductive circuit comprising the steps of:

successively applying a plurality of coats of micro-lens suitable material to the surface of a semiconductive circuit wherein the current coat is imparted with a succeeding one of a plurality of lens formation patterns;  
removing unwanted portions of the current coat of micro-lens suitable material; and  
forming a plurality of micro-lenses from the remaining portion of the current coat of micro-lens suitable material.

Claim 2 (original): The method of Claim 1 wherein the step of imparting the current coat with one of a plurality of lens formation patterns is accomplished by:

placing a formation mask that embodies one of the plurality of lens formation patterns proximate to the current coat of micro-lens suitable material; and  
aligning the formation mask to the semiconductive circuit;  
irradiating the formation mask.

Claim 3 (original): The method of Claim 1 wherein the plurality of lens formation patterns are alternate counterparts of each other.

Claim 4 (original): A method for depositing micro-lenses on a semiconductive circuit comprising the steps of:

applying a first coat of micro-lens suitable material to the surface of a semiconductive circuit;  
imparting a first lens formation pattern onto the first coat of micro-lens suitable material;  
removing unwanted portions of the first coat of micro-lens suitable material;  
forming a first plurality of micro-lenses from the remaining first coat of micro-lens suitable material;  
applying a second coat of micro-lens suitable material to the semiconductive circuit;  
imparting a second lens formation pattern to the second coat of micro-lens suitable material;

removing unwanted portions of the second coat of photo-resist; and  
forming a second plurality of micro-lenses from the remaining second coat of micro-lens  
suitable material.

Claim 5 (original): The method of Claim 4 wherein the first and second lens formation patterns  
are alternate counterparts of each other.

Claim 6 (original): The method of Claim 5 wherein the first and second lens formation patterns  
comprise rectangular regions in a checkerboard pattern.

Claim 7 (original): The method of Claim 6 wherein rectangular regions comprise broken corners  
to avoid continuity with neighboring regions.

Claim 8 (original): The method of Claim 4 wherein the step of forming the first and second  
plurality of micro-lenses comprise the steps of:

- raising the temperature of the micro-lens suitable material in order to relieve the surface  
tension thereof;
- allowing the micro-lens suitable material to reflow in order to achieve a desired lens focal  
length; and
- reducing the temperature of the micro-lens suitable material in order to preserve the  
achieved lens focal length.

Claim 9 (original): The method of Claim 1 wherein the step of applying the first and second coats  
of micro-lens suitable material comprise the step of spin coating a micro-lens suitable material  
onto the semiconductive circuit.

Claim 10 (original): The method of Claim 1 wherein the step of imparting the a first lens  
formation pattern onto the first coat of micro-lens suitable material comprises the steps of:

- placing a first formation mask comprising the first lens formation pattern proximate to the  
first coat of micro-lens suitable material;
- aligning the first formation mask relative to the semiconductive circuit; and

illuminating the first formation mask with radiation.

Claim 11 (original): A method for depositing micro-lenses on a semiconductive circuit comprising the steps of:

applying a first coat of micro-lens suitable material to the surface of the semiconductive circuit;

imparting a first lens formation pattern onto the first coat of micro-lens suitable material;

removing unwanted portions of the first coat of micro-lens suitable material;

applying a second coat of micro-lens suitable material to the surface of the semiconductive circuit;

imparting a second lens formation pattern onto the second coat of micro-lens suitable material;

removing unwanted portions of the second coat of micro-lens suitable material; and

forming a plurality of micro-lenses from the remaining portions of the first and second coats of micro-lens suitable material.

Claim 12 (canceled)

Claim 13 (currently amended): A micro-lens structure comprising:

a plurality of micro-lenses disposed proximate to radiation sensitive active regions formed in a semiconductive circuit located wherein each active region is formed within a boundary region perimeter;

wherein each micro-lens is formed from an island of micro-lens suitable material deposited onto the surface of the semiconductive circuit,

wherein each island of micro-lens suitable material occupies an area within the boundary region larger than a resolution setback relative to the perimeter of the boundary region,  
and

~~The micro-lens structure of Claim 12~~ wherein the islands of micro-lens suitable material are deposited onto the surface of the semiconductive material and wherein the micro-lenses are formed by:

successively applying a plurality of coats of micro-lens suitable material to the surface of a semiconductive circuit wherein the current coat is imparted with one of a plurality of lens formation patterns;

removing unwanted portions of the current coat of micro-lens suitable material; and forming a plurality of micro-lenses from the remaining portion of the current coat of micro-lens suitable material.

Claim 14 (original): The micro-lens structure of Claim 13 wherein the step of imparting the current coat with one of a plurality of lens formation patterns is accomplished by:

placing a formation mask that embodies one of the plurality of lens formation patterns proximate to the current coat of micro-lens suitable material; and  
aligning the formation mask to the semiconductive circuit;  
irradiating the formation mask.

Claim 15 (currently amended): The ~~method~~ micro-lens structure of Claim 13 wherein the plurality of lens formation patterns are alternate counterparts of each other.

Claim 16 (currently amended): A micro-lens structure comprising:

a plurality of micro-lenses disposed proximate to radiation sensitive active regions formed in a semiconductive circuit located wherein each active region is formed within a boundary region perimeter;  
wherein each micro-lens is formed from an island of micro-lens suitable material deposited onto the surface of the semiconductive circuit,  
wherein each island of micro-lens suitable material occupies an area within the boundary region larger than a resolution setback relative to the perimeter of the boundary region,  
and

~~The micro-lens structure of Claim 12 wherein the islands of micro-lens suitable material are deposited onto the surface of the semiconductive material and wherein the micro-lenses are formed by:~~

applying a first coat of micro-lens suitable material to the surface of the semiconductive circuit;

imparting a first lens formation pattern onto the first coat of micro-lens suitable material; removing unwanted portions of the micro-lens suitable material; forming a first plurality of micro-lenses from the remaining portion of the first coat of micro-lens suitable material; applying a second coat of photo-resist to the semiconductive circuit; imparting a second lens formation pattern onto the second coat of micro-lens suitable material; removing unwanted portions of the micro-lens suitable material; and forming a second plurality of micro-lenses from the remaining portion of the second coat of micro-lens suitable material.

Claim 17 (original): The micro-lens structure of Claim 16 wherein application of the first and second coats of from the remaining portion of the first coat of micro-lens suitable material is accomplished through a spin coating process.

Claim 18 (original): The micro-lens structure of Claim 16 wherein the imparting of a first lens formation pattern onto the first coat of micro-lens suitable material is accomplished by:

placing a first formation mask comprising the first lens formation pattern proximate to the first coat of micro-lens suitable material; aligning the first formation mask relative to the semiconductive circuit; and illuminating the first formation mask with radiation.

Claim 19 (original): The micro-lens structure of Claim 16 wherein the first and second lens formation patterns are alternate counterparts of each other.

Claim 20 (original): The micro-lens structure of Claim 19 wherein the first and second lens formation patterns comprise rectangular regions in a checkerboard pattern.

Claim 21 (original): The micro-lens structure of Claim 20 wherein rectangular regions comprise broken corners to avoid continuity with neighboring regions.

Claim 22 (currently amended): A micro-lens structure comprising:

a plurality of micro-lenses disposed proximate to radiation sensitive active regions formed in a semiconductive circuit located wherein each active region is formed within a boundary region perimeter;  
wherein each micro-lens is formed from an island of micro-lens suitable material deposited onto the surface of the semiconductive circuit,  
wherein each island of micro-lens suitable material occupies an area within the boundary region larger than a resolution setback relative to the perimeter of the boundary region,  
and

~~The method of Claim 12~~ wherein the micro-lenses are formed by:

raising the temperature of the islands of micro-lens suitable material in order to relieve the surface tension thereof;  
allowing the islands of micro-lens suitable material to reflow in order to achieve a desired lens focal length; and  
reducing the temperature of the islands of micro-lens suitable material in order to preserve the achieved lens focal length.

Claim 23 (canceled)

Claim 24 (currently amended): A semiconductive circuit image sensor comprising:

surface;  
a plurality of radiation sensitive active regions disposed in the surface wherein each active regions is encompassed by a boundary perimeter;  
sensing circuitry to sense the state of the plurality of active regions;  
a plurality of micro-lenses disposed proximate to and coincident with the plurality of active regions;  
wherein each micro-lens is formed from an island of micro-lens suitable material deposited onto the surface of the semiconductive circuit,  
wherein each island of micro-lens suitable material occupies an area within the boundary region larger than a resolution setback relative to the perimeter of the boundary region,  
and

~~The micro-lens structure of Claim 23~~ wherein the islands of micro-lens suitable material are deposited onto the surface of the semiconductive material and wherein the micro-lenses are formed by:

successively applying a plurality of coats of micro-lens suitable material to the surface of a semiconductive circuit wherein the current coat is imparted with one of a plurality of lens formation patterns;

removing unwanted portions of the current coat of micro-lens suitable material; and forming a plurality of micro-lenses from the remaining portion of the current coat of micro-lens suitable material.

Claim 25 (original): The micro-lens structure of Claim 24 wherein the step of imparting the current coat with one of a plurality of lens formation patterns is accomplished by:

placing a formation mask that embodies one of the plurality of lens formation patterns proximate to the current coat of micro-lens suitable material; and aligning the formation mask to the semiconductive circuit; irradiating the formation mask.

Claim 26 (currently amended): The ~~method~~ micro-lens structure of Claim 24 wherein the plurality of lens formation patterns are alternate counterparts of each other.

Claim 27 (currently amended): A semiconductive circuit image sensor comprising:  
surface;

a plurality of radiation sensitive active regions disposed in the surface wherein each active regions is encompassed by a boundary perimeter;  
sensing circuitry to sense the state of the plurality of active regions;  
a plurality of micro-lenses disposed proximate to and coincident with the plurality of active regions;  
wherein each micro-lens is formed from an island of micro-lens suitable material deposited onto the surface of the semiconductive circuit,

wherein each island of micro-lens suitable material occupies an area within the boundary region larger than a resolution setback relative to the perimeter of the boundary region, and

~~The semiconductive image sensor of Claim 23~~ wherein the islands of micro-lens suitable material are deposited onto the surface of the semiconductive material and wherein the micro-lenses are formed by:

- applying a first coat of micro-lens suitable material to the surface of the semiconductive circuit;
- imparting a first lens formation pattern onto the first coat of the micro-lens suitable material;
- removing unwanted portions of the first coat of micro-lens suitable material;
- forming a first plurality of micro-lenses from the remaining portion of the first coat of micro-lens suitable material;
- applying a second coat of the micro-lens suitable material to the semiconductive circuit;
- imparting a second lens formation pattern onto the second coat of the micro-lens suitable material;
- removing unwanted portions of the second coat of micro-lens suitable material; and
- forming a second plurality of micro-lenses from the remaining portion of the second coat of micro-lens suitable material.

Claim 28 (original): The micro-lens structure of Claim 27 wherein application of the first and second coats of micro-lens suitable material is accomplished through a spin coating process.

Claim 29 (original): The micro-lens structure of Claim 27 wherein imparting a first lens formation pattern onto the first coat of micro-lens suitable material is accomplished by:

- placing a first lens formation mask comprising the first lens formation pattern proximate to the first coat of micro-lens suitable material;
- aligning the first lens formation mask relative to the semiconductive circuit; and
- illuminating the first lens formation mask with radiation.

Claim 30 (original): The micro-lens structure of Claim 27 wherein the first and second lens formation patterns are alternate counterparts of each other.

Claim 31 (original): The micro-lens structure of Claim 30 wherein the first and second lens formation patterns comprise rectangular regions in a checkerboard pattern.

Claim 32 (original): The micro-lens structure of Claim 31 wherein rectangular regions comprise broken corners to avoid continuity with neighboring regions.